

PEN-8

Advanced breaker surfactant package

APPLICATIONS

- Invert-emulsion filtercake breaker applications
- Openhole completions, including barefoot, standalone screens, expandable screens, and openhole gravel packs

ADVANTAGES

- Acts slowly
- Facilitates uniform destruction of filtercake from systems such as the FAZEPRO* reversible invert-emulsion reservoir drill-in fluid system and the VERSAPRO* invert-emulsion reservoir drill-in fluid system
- Helps penetrate and disperse barite-laden filtercake
- Mixes at the rig site using rig equipment
- Deploys during completion operations
- Avoids an intervention trip

The PEN-8* advanced breaker surfactant package is a blend of mutual solvents and nonionic surfactants designed to penetrate and water-wet invert emulsion filtercakes. This process readies the filtercake for destruction with the MUDSOLV NG* integrated filtercake removal service. It can be used by itself in a brine to help disperse an invert emulsion, barite-laden filtercake, or it can be used along with a breaker to assist in dissolving the soluble components in the filtercake.

When included in a breaker formulation, the PEN 8 package penetrates and water-wets the filtercake to enable the active component of the breaker, such as D-STRUCTOR* organic-acid precursor breaker, to dissolve filtercake components.

As with all filtercake breakers, pilot testing is required to select the optimal concentration of the PEN-8 package and to confirm that the breaker system meets design criteria. Typical concentrations of the PEN-8 package range from 3–8% by volume, where higher or lower concentrations may be used based on lab testing results specific to each application.

Limitations

- Excessive concentrations can diminish performance due to a reduction in water activity and must be pilot tested
- Density of a formulated breaker fluid can be up to 12.6 lbm/galUS [1.51 sg]
- Surfactants perform at temperature up to 300 degF [149 degC]

Toxicity and Handling

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Safety Data Sheet. It is Cefas-registered (Centre for Environment Fisheries and Aquaculture Science) with a gold rating and without a substitution warning. Bioassay information is available upon request.

Packaging and Storage

The PEN-8 package is delivered in 55-galUS [208.45-L] drums, or cubic meter totes and is available from all M-I SWACO plant and warehouse locations. Store in a dry location.

Typical Physical Properties

Physical appearance	Amber liquid
Specific gravity, sg	0.96–1.10
pH	7.5–9
Solubility in water	Soluble
Flash point	> 212 degF [100 degC]